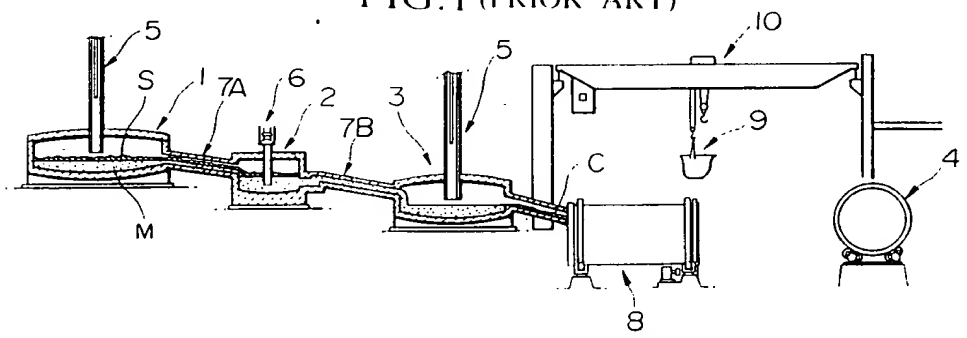
one of a plurality of anode furnaces. The converting furnace and the anode furnaces are connected by the blister copper launder means. See, e.g., Figure 3. Applicants' method overcomes the dangerous batchwise limitations of prior art methods for producing anode furnace-treated copper:

FIG. 1 (PRIOR ART)



where a ladle is used to transfer hot blister copper from a holding furnace, through the open air into an anode furnace. See pages 1-3 of the specification. Applicants' method provides a safe alternative to this dangerous situation.

The rejection of Claims 1-4 under 35 USC 112, second paragraph, is traversed. As pointed out by newly presented Claim 5, Applicants launder simply connects the converting furnace and the anode furnaces and is used to transfer blister copper between the two. No chemical reaction occurs in Applicants' launder means. As present Claim 5 amply describes the presently claimed process and the several elements used therein, the rejection should be withdrawn.

The requirement of a Terminal Disclaimer over copending application 08/040,999 is respectfully traversed. The present application is directed to a copper smelting process.

Copending application 07/040,999, on the other hand, is directed to a copper smelting apparatus. These two inventions are independent and patentably distinct. See MPEP 802.01 and 806.05(e).

Moreover, the present application and 07/040,999 claim priority under 35 USC 120 to USSNs 07/795,335 and 07/797,116, respectively. Both parent cases disclosed the other in Related Case Statements (filed September 17, 1992 in 07/795,335 and September 21, 1992 in 07/797,111) and Terminal Disclaimers were not required. It is to be further noted that both parent applications were handled by Examiner Rosenberg, the Examiner of the present application. Finally, co-pending application 08/040,999 (also handled by Examiner Rosenberg) is not rejected over the present application.

Accordingly, and beginning with the parent applications, a clear line of distinction has been established between the present process application and the copending apparatus application. Distinctness is present as evidenced by the lack of provisional obviousness-type double patenting rejections in the parent applications and in copending application 08/040,999. The requirement of a Terminal Disclaimer is thus respectfully traversed, and the requirement should be withdrawn.

Finally, it is to be noted that the cited prior art (Worner '672 and '449 and Arentzen) nowhere disclose or suggest a copper smelting process like that presently claimed.

For example, none of the cited references suggest the transfer of blister copper through launder means to one of plural anode furnaces. Application of these references against the claims would be improper.

Accordingly, and in view of the above amendments and remarks, Applicants submit that this application is in condition for allowance. An early Notice of Allowance is earnestly solicited.[1]

Respectfully submitted,

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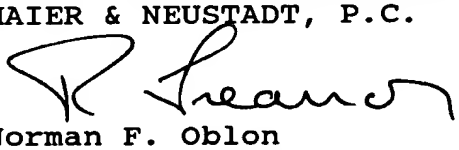

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[1]In order to expedite the prosecution of the above-identified application, an English translation of Taiwan 195046 is attached hereto, as requested in copending application 08/040,999. However, and as explained at greater length in Applicants' response in the copending application, Applicants' present claims are fully supported by USSN 07/795,335 (the parent application of the present case) and thus Applicants' claims are entitled to priority under 35 USC 120 to a filing date of November 20, 1991. The Taiwanese document thus does not qualify as prior art against the claims of the above-identified application. For convenience, a copy of U.S. 5,217,527 (the published patent of the parent case) is attached hereto, and support for the present claims is readily found therein, particularly at column 2, lines 9-57, in Figure 3, and at column 5, line 13 - column 6, line 3.

English Translation of Taiwan Patent Publication No. 195046

[11] Patent Publication No.: 195046
[44] November 21, Taiwan 81 (1992)
[51] Int.Cl: C22B15/14

[54] Title: Apparatus for Continuous Copper Smelting
[21] Appl. No.: 80110113
[22] Filed: December 24, Taiwan 80 (1991)
[72] Inventors:

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[57] Claims:

1. An apparatus for continuous copper smelting, comprising:

a smelting furnace for melting and oxidizing copper concentrate to produce a mixture of matte and slag;

a separating furnace for separating the matte from the slag;

a converting furnace for oxidizing the matte separated from the slag to produce blister copper;

melt launder means for connecting said smelting furnace, said separating furnace and said converting furnace in series; and

a plurality of anode furnaces for refining the blister copper produced in said converting furnace into copper of higher quality,

characterized in that blister copper launder means is provided for connecting said converting furnace and said anode furnace;

said blister copper launder means including a main launder having one end connected to said converting furnace and a plurality of branch launders each having one end connected to the other end of said main launder and the other end connected to a respective one of said anode furnaces; and

that a selecting device is attached to said blister copper launder means for selectively bringing said main launder into fluid communication with one of said branch launders.

2. A continuous copper smelting apparatus as recited in claim 1, wherein each of said anode furnaces includes a furnace body having a shell portion and a pair of end plates mounted on opposite ends thereof, said furnace body being supported rotatably about an axis thereof with said axis being arranged horizontally, said shell portion of said furnace body having a circumferentially extending opening for receiving the blister copper; and wherein said blister copper launder means includes an end portion disposed at said opening of said furnace body.

3. A continuous copper smelting apparatus as recited in claim 2, wherein each of said anode furnaces includes an exhaust duct formed so as to provide a hood over said opening of said fur-

nace body in relation to a prescribed rotational range of said furnace body, whereby exhaust gas is exhausted through said opening.

4. A continuous copper smelting apparatus as recited in claim 3, wherein the end portion of said blister copper launder means located above the opening of said furnace body is provided with a water-cooling jacket.

5. A continuous copper smelting apparatus as recited in claim 1, wherein said plurality of anode furnaces are disposed parallel to one another with each anode furnace being directed toward said converting furnace while the shell portions of adjacent anode furnaces are opposed to each other.

Brief Description of the Drawings:

FIG. 1 is a schematic cross-sectional view of a conventional copper smelting apparatus;

FIG. 2 is a schematic plan view of the apparatus of FIG. 1;

FIG. 3 is a plan view of a continuous copper smelting apparatus in accordance with the present invention;

FIG. 4 is an enlarged plan view of an anode furnace used in the apparatus of FIG. 3;

FIG. 5 is an enlarged side-elevational view of the anode furnace of FIG. 4;

FIG. 6 is a cross-sectional view of the anode furnace of FIG. 4 taken along the line VI-VI in FIG. 4;

FIG. 7 is a cross-sectional view of the anode furnace of FIG. 4 taken along the line VII-VII in FIG. 5;

FIG. 8 is a partially cut-away plan view of a part of the anode furnace of FIG. 4;

FIG. 9 is a cross-sectional view of the anode furnace taken along the line IX-IX of FIG. 8;

FIGS. 10 to 12 are cross-sectional views of the rotated anode furnace corresponding to blister copper receiving stage, oxidation stage, and reduction stage, respectively;

FIG. 13 is a partially cut-away perspective view of a selecting device which may be used with the apparatus of FIG. 3;

FIG. 14 is a cross-sectional view showing a part of the selecting device of FIG. 13;

FIG. 15 to 17 are schematic representations showing the operational flow using the apparatus of FIG. 3;

FIG. 18 is a plan view showing an example for the arrangement of the anode furnaces and blister copper launder means for connecting converting furnace to the anode furnaces; and

FIG. 19 is a plan view similar to FIG. 18, but showing more preferred arrangement of the anode furnaces and the fluid passageways therefor.

(Note: Drawings are identical to those of U.S. Patent No. 5,205,859.)